

# I-View Videolaryngoscope for Difficult Laryngoscopy and Intubation in an Obese Patient Posted For Laparoscopic Cholecystectomy: An Encouraging Experience

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## ABSTRACT

Management of difficult airway is considered as one of the important tasks of an anesthesiologist. The problems related to it are known to be primary causes of life-threatening consequences. Herewith, we present a case of difficult airway scenario managed successfully with new airway gadget I-View. An obese patient with inadequate mouth opening and short neck limits the alignment of oro-pharyngo-laryngeal opening. This case highlights the role of I-View videolaryngoscope which is one of the new videolaryngoscopes for such patient scenario.

**Keywords:** I-View videolaryngoscope, Difficult Airway, Body Mass Index(BMI).

## INTRODUCTION

Indirect laryngoscopy performed using a videolaryngoscope remains one of the major tools in the management of predicted difficult intubation. Video assisted airway management using various forms of video laryngoscopes design has been introduced in the last decade to bridge the gap between direct laryngoscopy and fiberoptic bronchoscopy for an anticipated or unanticipated difficult airway. Videolaryngoscopes may improve the view of glottis,<sup>[1]</sup> and helps to reduce peri-intubation complications by reducing the force used for visualization of the glottis and reducing the amount of intubation attempts compared to Macintosh blade standard laryngoscope.<sup>[2,3]</sup> Videolaryngoscopes use video camera technology which differ between devices producing different image quality and possible different visualization of glottis.<sup>[4]</sup>

Obesity criterion is when body mass index (BMI)  $\geq 30 \text{ kg/m}^2$ .<sup>[5]</sup> It is one of the risk factors influencing probability of difficult mask ventilation and difficult intubation. Obese patients depending upon BMI and markers of anticipated difficult intubation, should be intubated either with fiberscope awake intubation or with video laryngoscopes.<sup>[6]</sup> Recent publications

points on clearer indications on use of videolaryngoscopes and intubation and airway management strategies in obese patients.<sup>[7]</sup> It is important to maintain sufficient oxygenation during intubation efforts like spontaneous breathing during awake technique or apneic oxygenation during general anesthesia.<sup>[8-10]</sup> We herein describe a successful case of an endotracheal intubation in an anticipated difficult airway using the I-View videolaryngoscope [Figure 1]. Informed consent was obtained from the patient prior to the publication of this case report.



Figure 1: The evaluated videolaryngoscope – I-View

## CASE REPORT

A 45-year-old female, who weighed 102kg with BMI of 40kg/m<sup>2</sup> and had a medical history of

repeated attacks of pain abdomen, nausea and vomiting for 6 months presented at our institution. Subsequently ultrasonography whole abdomen showed chronic cholelithiasis for which she was planned for laparoscopic cholecystectomy. During the preoperative anaesthetic visit, airway assessment demonstrated an inadequate mouth opening of two and a half finger and limited neck flexion and extension movements, with a Mallampati class IV score. NPO(Nil Per Oral) orders were placed after followup of the routine investigations and clearance from anesthesia clinic.

The patient was transported to the operating room on the day of surgery. The difficult airway cart was rechecked. After proper ramped positioning on table, she was premedicated with iv midazolam 0.03mg/kg and iv metoclopramide 0.15mg/kg. After preoxygenation for 3 minutes using CPAP intubation was proceeded using iv propofol 2mg/kg and iv succinylcholine 1.5mg/kg. We did not attempt conventional laryngoscopy, instead we opted for I-View videolaryngoscope. The I-View laryngoscopy revealed Cormack-Lehan grade 2b view of laryngeal aperture with vision of only posterior commissure. POGO score was assessed and recorded as score 2 with visualization of 50-75% of glottis opening. Only one attempt was required to intubate the patient with application of jaw thrust. No extrinsic manipulation of larynx (OELM) was required. A size PVC 7mm internal diameter cuffed endotracheal tube was easily passed through glottis to secure the airway [Figure 2]. The patient was hemodynamically stable during the procedure. IV fentanyl 1mcg/kg was given intraoperatively to give adequate analgesic coverage. The surgery was successfully performed. There was no incidence of any dental or airway trauma or unpleasant sensation in the throat just prior to discharge from PACU or 24 hrs post operative period.



**Figure 2: Morbidly Obese patient on operating table after being intubated using I-View.**

## DISCUSSION

In this study we studied the performance of I-View videolaryngoscope in providing better glottis

visualization of larynx. I-View provided sufficient view of glottis to perform safe and effective endotracheal intubation. It is the new, single use, fully disposable video laryngoscope. Hence providing a cost effective solution.

With incorporation of the classic Macintosh laryngoscope blade design, it can also be used for direct as well as video laryngoscopy. The ergonomic design ensures that i-view is easy and ergonomic to use and the integral LCD screen provides an optimal view in a variety of light conditions; and is ready for use seconds after removing from the packaging. [Figure 1]

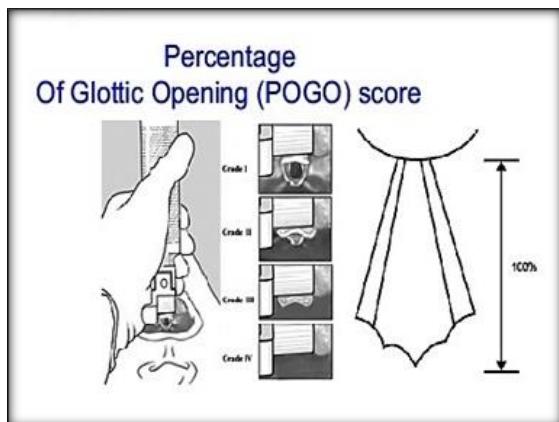


**Figure 3: Intubating using I-View**

With increasing BMI, the probability of difficult intubation is increased.<sup>[11]</sup> Dixit et al. observed that 44.4% of super obese patients (BMI of 50 kg/m<sup>2</sup>) had incidence of Cormack-Lehane grades 3 and 4 comparing to 20.4% in morbidly obese patients (BMI of 40 kg/m<sup>2</sup>).<sup>[12]</sup> Neck circumference of more than 42 cm and BMI more than 50 kg/m<sup>2</sup> (super-obese) are independent predictors of difficult intubation.<sup>[13]</sup> These results show that in case of obese patients, it is necessary to be prepared for difficult intubation. Therefore the use of video based airway devices for intubation in obese patients is justified. However, oxygenation should in fact remain the primary aim during intubation efforts, not just using videolaryngoscope correct preoxygenation in obese patients is of paramount importance.<sup>[14]</sup> It is advised to position obese patient in Fowler position, oxygenate for at least 3 min (sometimes even up to 8 min) or use additional CPAP.<sup>[15]</sup> In case of difficult airway and problems with oxygenation supraglottic devices should be used which perform very well in obese patients for temporary ventilation.<sup>[16,17]</sup>

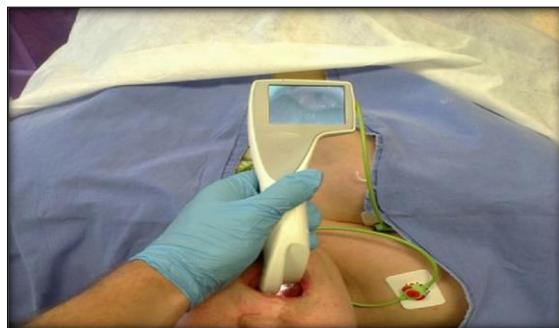
In all recently searched studies describing video laryngoscopy in morbidly obese focused on assessment of Cormack-Lehane score.<sup>[17-19]</sup> Yousef et al, studied airway management of morbidly obese patients, comparing GlideScope® video laryngoscope and the LMA CTrach™ with direct laryngoscopy and were able to report a cormack lehan grade 1 with majority of video laryngoscope based attempts.

Gaszyński et al performed study on evaluation of obtained visualization of airway in morbidly obese patients using video device—Total Track, King Vision, Airtraq etc and also achieved Cormack-Lehane grade<sup>1</sup>.<sup>[2]</sup>



**Figure 4: Grades of POGO score**

There was a comparative lack of evaluation of more sensitive score like POGO [Figure 4]. We decided to use POGO score instead of Cormack Lehane score in this study .Other assessment scales are Fremantle score.<sup>[21]</sup>



**Figure 5: Best view obtained using I-View.**

## CONCLUSION

The present case report demonstrates that the I-View videolaryngoscope can be used effectively for airway management in suspected or known difficult airway presentations. When dealing with difficult airways such as the one observed in the present case, extensive airway assessment, careful planning, and thorough backup plan are paramount. The backup plan may include the use of fiberoptic bronchoscopy, expert assistance, airway adjuncts and readily available options for surgical airway access.

Key advantages of I-View video laryngoscopy include: better view of the larynx [Figure 5], reduced head and neck manipulation, less force required, reduced attempts at laryngoscopy, higher success rate than direct laryngoscopy when direct laryngoscopy might fail.

However further case series and studies are required to assess its efficiency in comparison to other

established video laryngoscopes like King Vision and CMac. Thus, the role of video laryngoscopes continues to evolve.

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